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## NOTES ON ODYNERUS WITH A KEY TO THE NORTH AMERICAN SUBGENERA AND DESCRIPTION OF A NEW SUBGENUS

(Hymenoptera, Vespidae)

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### KEY TO THE SUBGENERA OF ODYNERUS IN NORTH AMERICA

1. First abdominal sternite nearly flat, hardly as broad as its median length; head distinctly longer than broad as viewed from the front; second abdominal sternite without a median basal furrow.....*Dolichodynerus* Bohart
- . First abdominal sternite much broader than its median length .....2
2. Median length of second abdominal tergite more than twice the median length of the second sternite; second sternite flat, not curved toward the base; second tergite with a membranous apical margin.....*Maricopodynerus* Viereck
- . Median length of second tergite less than twice that of second sternite .....3
3. Front face of pronotum without a pair of distinct pits or impressed lines near the middle.....4
- . Front face of pronotum with two distinct pits or impressed lines near and on either side of the middle.....9
4. Summit of first abdominal tergite with a distinct transverse carina, rarely obsolete at the dorsal middle.....5
- . First abdominal tergite without a transverse carina.....7
5. Second cubital cell of the forewing petiolate anteriorly.....*Alastoroides* Saussure
- . Second cubital cell of the forewing not petiolate; no pale markings in the emarginations of the eyes.....6
6. First abdominal tergite with a median longitudinal post-sutural groove; first tergite without long erect hair; male antennae thirteen-segmented, not hooked or rolled apically. ....*Symmorphus* Wesmæl
- . First tergite without a longitudinal groove, with long erect hair; male antennae hooked apically.....*Ancistrocerus* Wesmæl
7. With a carina running from the pronotal angles obliquely to the mesothorax; propodeum usually bordered superiorly with prominent membranous ridges; male antennae apparently eleven-segmented, the last two segments being minute.....*Pachodynerus* Saussure

- . Without a carina running from the pronotal angles obliquely to the mesothorax; male antennæ hooked apically.....8
- 8. Small species, often silvery-pubescent and marked with rufous; first abdominal tergite usually well punctured and often with the apical margin swollen; clypeus usually apically incised .....*Leptochilus* Saussure
- . Medium to large species; first tergite thinly margined apically and usually hardly punctured; clypeus rarely apically incised.....*Rygchium* Spinola
- 9. Pits on front face of pronotum linear and well separated; male antennæ usually coiled apically; markings often bright red in North American species; body form robust.....*Odynerus* Latreille
- . Pits on front face of pronotum close together and round or oval; male antennæ hooked apically; slender species.....10
- 10. Summit of first abdominal tergite with a shelf-like transverse carina.....*Parancistrocerus* Bequaert
- . Summit of first tergite without a shelf-like carina.....*Stenodynerus* Saussure

#### Subgenus LEPTOCHILUS Saussure

*Leptochilus* Saussure, 1852. Etud. Fam. Vesp., 1:233.

*Parodynerus* Saussure, 1856. Etud. Fam. Vesp., 3:245.

*Microdynerus* Thomson, 1874. Scandinaviens Hymenoptera, 3:58.

*Zendalia* Robertson, 1928. Flowers and Insects, p. 12 (erects new genus for *acolhuus* Sauss. and *zendaloides* Robt.).

Subgenotype: *Pterochilus mauretanicus* Lep.

The original generic description of Saussure was as follows:

“Lèvre longue, linéaire. Palpes labiaux sensiblement plus courts que la languette, de quatre articles, très grêles, presque glabres; le premier très long, le quatrième très petit. Machoires et mandibules comme dans le genre *Pterochilus*, mais les palpes très grêles. Chaperon aussi large, ou plus large que long, arrondi en dessus. Le rest comme le genre en question.”

The genus was erected by Saussure for *Pterochilus mauretanicus* Lep.; *Discoelius cruentatus* Brullé; *Odynerus oraniensis* Lep.; and *Leptochilus fallax* Sauss., *ornatus* Sauss., *parvulus* Sauss., and *exiguus* Sauss. In a recent paper Blüthgen has divided *Leptochilus* and *Microdynerus* into several genera and subgenera (Blüthgen, P., Beitrage zur Kenntniss der palaearktischen Eumeniden, *Deutsche Ent. Zeitschr.*, 1938:434-496). In the author's opinion Blüthgen has overemphasized species group differences, and the multiplicity of names which he has added tend to confuse rather than simplify the complex eumenine picture.

All intergrades occur between species typical of *Leptochilus* and those typical of *Microdynerus*. A comparison of the European type species, *O. (Microdynerus) exilis* Herrich-Schaeffer, with a variety of North American species leads the author to the conclusion that *Microdynerus* merely represents the less heavily sculptured *Leptochilus*.

When *Leptochilus* was placed in *Odynerus* by Dalla Torre, *ornatus* was preoccupied and the name *republicanus* was substituted for it. Apparently, this species has not been recognized since Saussure described it. However, the author has examined specimens of both sexes of a species which agrees exactly with the original description and figures. Moreover, this species, which is rare, appears to be the only one of its species group occurring in the locality designated by Saussure, *e. g.*, "Carolina." A redescription of this species is given below. The other species described by Saussure from "America," *fallax*, has never been identified with a North American species and, as Saussure himself suggested, probably was mislabeled.

Among the numerous species of North American *Leptochilus* are *O. rufinodus* Cr., *bellulus* Cr., *electus* Cr., *congressus* Vier., *rufobasilaris* Ashm., *fedorensis* Cam., *tosquineti* Cam., and *zendaloides* Robt.

#### ODYNERUS REPUBLICANUS Dalla Torre

(Figs. 1-3)

*Leptochilus ornatus* Saussure, 1852, Etud. Fam. Vesp., 1:233, pl. 20, fig. 4 (nec Smith, 1852).

*Odynerus republicanus* Dalla Torre, 1889. Wien. Ent. Zeitsch., 8:125.

Male. Black; clypeus except apical margin, first antennal segment in front, pronotum anteriorly except at middle, mesopleural spot, tegula, two spots on scutellum, femora apically, outsides of tibiae, apical margins of first two or three abdominal tergites and second sternite, yellow; mandible partly, first antennal segment behind, legs mostly, first abdominal segment except for apical margin, dark reddish; wings dark smoky, the veins black. Clypeus and emargination of compound eye weakly silvered; pubescence of head and thorax sparse, pale, and hardly longer than an ocellus; pubescence of abdomen minute, silvery. Body coarsely punctured, punctures almost contiguous; clypeus and front face of pronotum coarsely punctured; apical abdominal tergites with finer puncturation. Clypeus much broader than long, strongly convex in lateral

view, with a very small apical incision; mandible four-toothed; last antennal segment curved, finger-like, as long as tenth segment and reaching to its apex; inter-ocellar area with a pair of prominent tubercles; head greatly developed behind ocelli; post-scutellum serrately crested; hind face of propodeum roundly concave; middle femur normal; abdomen short and stout (see fig. 2); second sternite without a median basal suture; length to apex of second tergite, 6.5 to 7.5 mm.

Female. Coloration, pubescence, and puncturation about as in male with the following exceptions: Clypeus dark yellow, red, and black. Clypeus weakly incised apically, once and two-thirds as broad as long; length to apex of second tergite, 8 mm.

Records. "Carolina" (male and female types, Paris Museum); one male, South Carolina, July; one female, Nelson County, Virginia, July 30, 1926 (W. Robinson); one female, Hilliard, Florida, August 19, 1930 (J. Nottingham); one male and one female, Fedor, Texas, April, 1899; one male, Medora, Kansas, June 24, 1926 (D. R. Lindsay); one female, Graham County, Kansas, August 16, 1912 (F. X. Williams).

#### Subgenus STENODYNERUS Saussure

(Fig. 13)

*Stenodynerus* Saussure, 1854. *Melanges Hyménoptérologiques*, fasc. 1:58.

Type by present designation, *Odynerus chinensis* Saussure.

The following is quoted from the original description of the subgenus:

"Formes du corps grêles, allongées. Thorax allongé. Abdomen souvent cylindrique; écusson aplati, métathorax convexe, creusé d'une fossette variable; à bords en général arrondis."

Of the two species included in the original description, *angustus* Sauss. and *chinensis* Sauss., the latter appears to be typical of North American species commonly placed in this subgenus by previous workers.

*Stenodynerus* probably contains more species than any other American subgenus. They are mostly small to medium sized, slender, and with the clypeus often longer than broad. The two distinct approximate pits on the front face of the pronotum are also characteristic of *Parancistrocerus*, and these two subgenera intergrade so that some species are difficult to place. A few species of *Stenodynerus* resemble certain *Leptochilus* closely and



apparently form an intermediate link between the two. In such cases the pronotal pits are the only means of separation. The following North American species are typical of *Stenodynerus*: *O. anormis* Say, *blandus* Sauss. (fig. 13), *taos* Cr., *cochisensis* Vier., *lucidus* Roh., *pedestris* Sauss., *toltecus* Sauss., and *fundatus* Cr.

### Dolichodynerus Bohart, new subgenus

(Figs. 4-10)

Subgenotype, *Odynerus turgiceps* Bohart.

This subgenus contains the most elongate species of North American *Odynerus*. It is probably most closely allied to *Stenodynerus* and may possibly be a derivative of it. Only two species are known at present and both are rare in collections. Of these, *tanynotus* is the least modified. The greatly lengthened first sternite occurs in both species and readily separates the subgenus from all others in North America.

Body elongate; head distinctly longer than broad in front view; thorax strongly flattened dorsally and about twice as long in dorsal view as broad at the tegulæ; first abdominal segment about twice as long as its greatest thickness in lateral view, first sternite with its median length about as great as its breadth. Front face of pronotum coarsely punctured, without discrete pits, or with a single median pit. Female vertex without depression. Pronotal carina separated from mesonotum by more than three ocellus lengths. Second cubital cell of forewing strongly narrowed anteriorly. First abdominal tergite with rudiments of a transverse carina near its base; second sternite flattened basally and without a median furrow. Male antenna thirteen-segmented, apically hooked, last segment straight. Third segment of female antenna about one and one-third times as long as second. Male genitalia slender; ædeagus simple at apex, notched sub-basally; parameres simple, slender, and weakly haired.

### KEY TO THE SPECIES OF DOLICHODYNERUS

- With prominent smooth swellings behind and close to the compound eyes; edges of compound eyes at the emarginations distinctly above the level of the face at that point; second abdominal tergite not raised apically; apices of second and third tergites fitting against sub-basal carinæ on tergites three and four; coloration black and yellow.....*turgiceps*
- Without swellings behind the compound eyes; edges of compound eyes on a level with the rest of the face at the emarginations; second tergite smoothly raised apically; no carinæ on tergites three and four; coloration largely red and yellow.....*tanynotus*

*Odynerus turgiceps* Bohart, new species

(Figs. 4-8)

Particularly remarkable are the sub-basal carinæ of the third and fourth tergites which prohibit the telescoping of these segments as in other *Odynerus*. This unique condition adds materially to the elongate appearance of the species.

Male. Black; first antennal segment in front, spot on mandible, clypeus mostly, frontal stripe, post-ocular spot, stripe across pronotum, mesopleural spot, spot on tegula, two spots on scutellum, elongate spot on propodeum laterally, outsides of tibiæ, crescent-shaped spot at center of basal third of first abdominal tergite, apical margins of first to fourth tergites and fourth to seventh sternites, lateral spots on second and third sternites, bright yellow; wings darkly brown-clouded especially along anterior third. Pubescence of entire body minute, less than one ocellus length. Puncturation of head, thorax, and first four abdominal segments coarse and close; clypeus less coarsely than front; front face of pronotum coarsely throughout; propodeum weakly striate; last two abdominal segments finely punctured. Clypeus roughly five-sided except for roundly incised apex; head depressed at emargination of compound eye to depth of an ocellus; with a pair of shining post-ocular tubercles originating between hind ocelli; with two pairs of large post-ocular tubercles or humps; prothorax with a median longitudinal crease, with a sharp transverse anterior carina, sharply rounded pronotal angles, distance from carina to mesonotum about five ocellus lengths; posterior face of propodeum roundly concave, with rough dorsal edges; first abdominal tergite with a weak sub-basal carina, apex slightly raised; second tergite slightly constricted at basal third; third and fourth tergites with sub-basal carinæ which prevent their slipping under tergites two and three respectively; length to apex of second tergite, 6.5 mm.

Female. Markings, pubescence and puncturation about as in male with the following exceptions: Clypeus, antenna, hind tibia and last two abdominal sternites black; mandible and tarsi reddish-tinted. Second to fourth antennal segments with a length ratio of 3:4:3 respectively; mandible five-toothed, subapical tooth very weak; length to apex of second tergite, 7 mm.

Holotype, male, no. 4829, Calif. Acad. Sci., Ent., allotype, female, no. 4830, Calif. Acad. Sci., Ent., and one paratype, female, Sunset Valley, Santa Barbara County, California, July 14, 1938 (M. A. Cazier). Other paratypes, Arizona: One female, Santa Rita Mountains. California: One female, San Jacinto Mountains, July, 1912 (J. C. Bridwell); one female, La Crescenta, Los

Angeles County, August 7, 1938, on *Eriogonum* (C. Michener and R. Bohart); one female, Eagle Rock Hills, Los Angeles County, June 22, 1934 (C. D. Michener); one male, Glen Ivy, Riverside County, May 13, 1928, on *Eriogonum fasciculatum* (P. H. Timberlake); one female, Dos Palmos, Riverside County, March 28, 1934. Holotype and allotype in the California Academy of Sciences; paratypes in U. S. National Museum, and the respective collections of J. Bequaert, P. H. Timberlake, and the author.

ODYNERUS TANYNOTUS Cameron

(Figs. 9-10)

*Odynerus tanynotus* Cameron, 1909. Pomona Jour. Ent., 1:133.

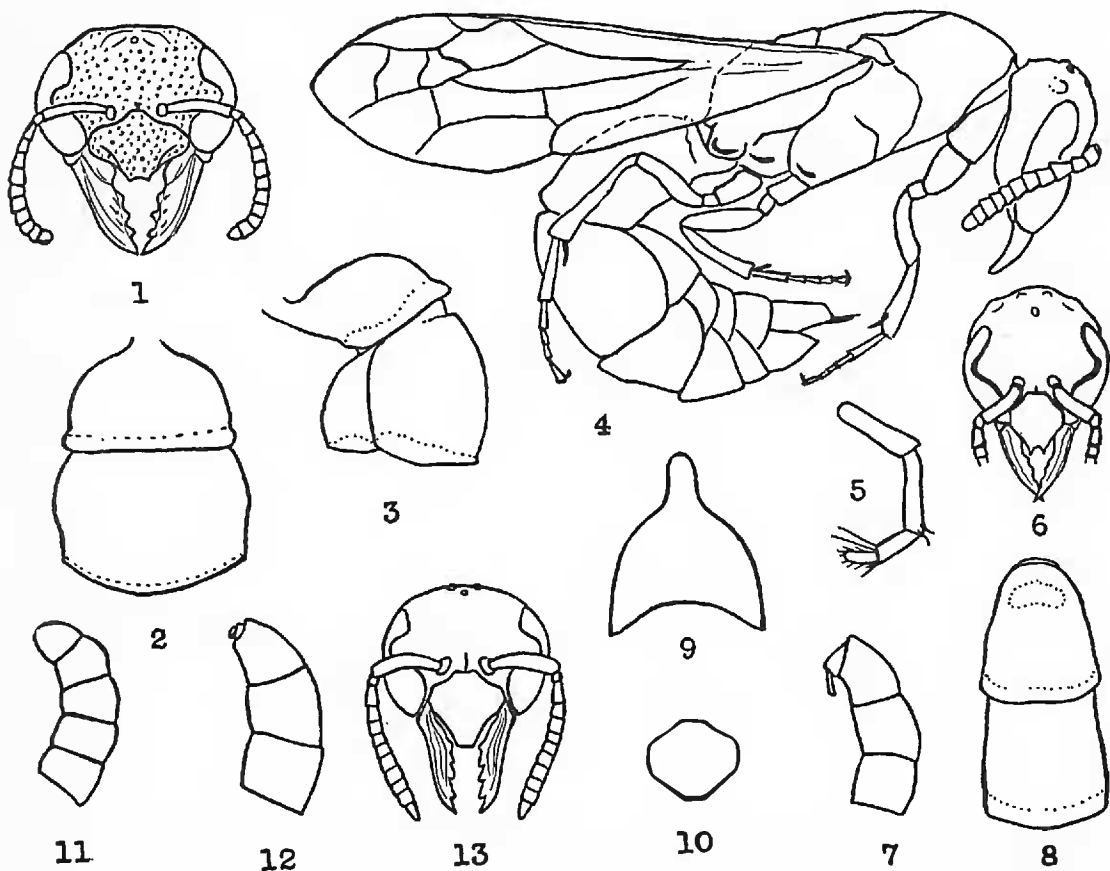
The most peculiar feature of this species is its long second abdominal tergite which, at rest, is half concealed beneath the first. By virtue of this fact it is able to bend its abdomen sharply at right angles by exposing the basal portion of the second tergite. This condition also occurs to a lesser extent in *turgiceps*. Although similar in general body shape to the latter, *tanynotus* can readily be distinguished by the characters given in the key. The following is an original description of the male and a re-description of the female.

Male. Black, extensively marked with varying amounts of yellow and red; head largely black and yellow, thorax largely black and red; abdomen largely red and yellow; clypeus, eye emargination, first antennal segment in front, frontal stripe, front margin of pronotum and scutellum posteriorly yellow; legs reddish, tinted with yellow on tibiae. Pubescence obscure. Body, except for abdomen apically, closely and coarsely punctured. Mandible five-toothed; clypeus narrowly and angularly notched apically; last antennal segment longer than twelfth, last two segments together as long as eleventh; low, punctured, inter-ocular tubercles present; distance from pronotal carina to mesonotum about four ocellus lengths; middle femur slightly depressed at its outside middle; first abdominal tergite roughened at base but without a distinct carina, first tergite enclosing about half of second tergite at rest; apex of second tergite smoothly raised; length to apex of second tergite, 8-9 mm.

Female. Markings, pubescence, and puncturation about as in the male with the following exceptions: Tendency toward suppression of black is greater; legs red. Mandible five-toothed; clypeus truncate apically (fig. 10); second to fourth antennal

segments with the length ratio of 4:5:4 respectively; length to apex of second tergite, 10-11 mm.

Records. California: One female, Dos Palms, Riverside County, March 28, 1934. Arizona: One female, Congress (Cameron holotype); one male, Catalina Springs; one female, Patagonia; two females, Cave Creek, Chiricahua Mountains, July 4, 1930 (E. G. Linsley); one female, Tucson, August. New Mexico: One female, Las Cruces (T. D. A. Cockerell); two females, Almagordo. Oklahoma: One male, Stillwater (C. Locke). Texas: One female, Uvalde; two males, Austin, April 12, 1902; one male, Laredo, May 10, 1924; one male, Cotulla, May 5, 1905 (W. D. Pierce).



*Odynerus republicanus*, fig. 1, front view of female head; fig. 2, dorsal view of tergites one and two; fig. 3, lateral view of first two abdominal segments. *O. turgiceps*, fig. 4, side view of female; fig. 5, female labial palpus; fig. 6, front view of female head; fig. 7, end of male antenna; fig. 8, dorsal view of tergites one and two. *O. tanynotus*, fig. 9, first sternite of female; fig. 10, female clypeus. *O. (Symmorphus) debilis*, fig. 11, segments 9-13 of male antenna. *O. (Pachodynerus) californicus*, fig. 12, segments 9-13 of male antenna. *O. (Stenodynerus) blandus*, fig. 13, front view of female head.